

The measurement of Earth's thermal...

S/560/62/000/014/003/011  
A001/A101

station (rocket) is shown in Figure 2. The rocket was lifted to an altitude of about 100 km. During the operation at high altitudes the device performed about 5 cycles of scanning, three of which were satisfactory and were used for processing. The recorder of radiation functions on the differential system of registration; the speed of scanning motion is  $6^\circ$  per one sec.; the threshold of bolometer sensitivity amounts to  $10^{-9}$  w/cps at a frequency of 80 cps; the spectral sensitivity of the bolometers is uniform within the range from 1 to  $40 \mu$ . The mean magnitude of the thermal flux, averaged for the total scanning angle, was determined to amount to  $1.8 \times 10^{-2}$  w.cm $^{-2}$ . The experiment conducted, as well as the previous measurements of the Earth's thermal radiation, is the first attempt of this kind. There are 5 figures.

SUBMITTED: March 10, 1962

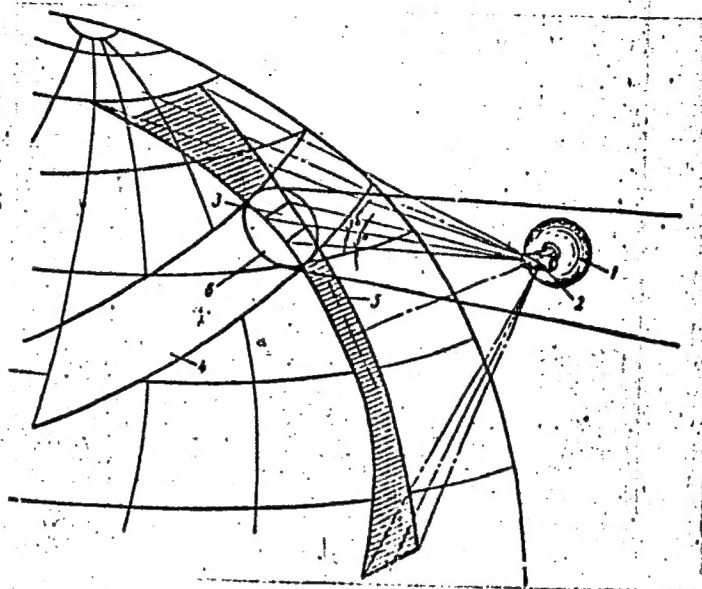
Card 2/4

The measurement of Earth's thermal...

S/560/62/000/014/003/011  
A001/A101

Figure 1. The scheme of an experiment

Legend: 1 - Altitude geo-physical automatic station; 2 - recorder of Earth's radiation; 3 - area on the Earth whose radiation is being measured; 4 - belt of total eclipse phase; 5 - band of scanning; 6 - lunar umbra.

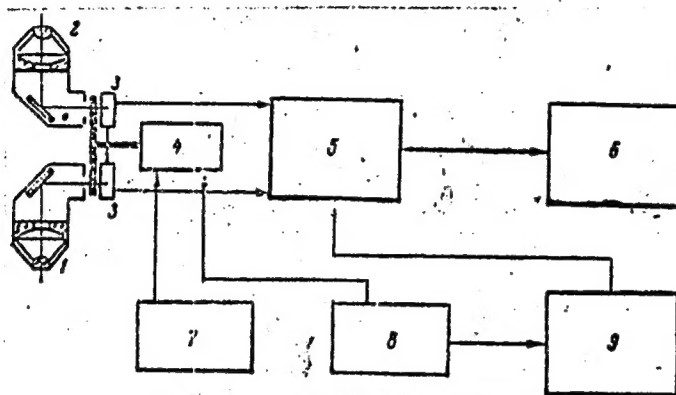


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The measurement of Earth's thermal...

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Figure 2. The block-diagram of a device for recording Earth's thermal radiation  
Legend: 1 - scanning optical head; 2 - optical head of zero signal; 3 -  
bolometers; 4 - mechanism of scanning; 5 - amplifier; 6 - telemeasuring  
system; 7 - motor supply source; 8 - commanding device on board; 9 - supply  
source (autonomous).



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L 15593-63

EPA(b)/EWT(1)/FCC(w)/FS(v)/BDS/EEC-2/ES(v) AEDC/AFFTC/  
AFMDC/ESD-3/APDC/SSD PG-L/Pg-L/P1-L/Pe-L/Pe-L/Pq-L GW

ACCESSION NR: AF3006854

8/2560/63/000/015/0003/0021

AUTHOR: Kasatkin, A. M.

TITLE: Upper-level optical station for investigations of the atmosphere

SOURCE: AN SSSR. Izvest. sputniki Zemli, no. 15, 1963, 3-21

TOPIC TAGS: atmospheric station, upper atmospheric layers, rocket-lofted atmospheric station, radiation balance, telephotometer, teleradiometer, spectro-analyzer, balance meter, optical scanning device, upper-level optical station, atmospheric investigation

ABSTRACT: The technical specifications and capabilities of the VGAS (Upper Level Geophysical Automatic Station), used for optical investigations of the atmosphere, are described. The station, a sphere 1 m in diameter and weighing 360 kg, is lofted by an A1 rocket to heights of about 65 km, where it separates from the carrier and automatically orients itself in space. A 20-kg equatorially mounted gyroscope, powered by a 300-w electric motor, maintains orientation to about 100 km on the ascending branch of the trajectory and to about 43 km on the descending branch. The motor is controlled by means of photoelect.

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ACCESSION NR: ATJ006854

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sensors when solar orientation is employed, and by means of a free gyroscope when a fixed azimuth is required. Azimuthal orientation is achieved with an accuracy of  $\pm 5^\circ$  and maintained during flight with an accuracy of  $\pm 0.5^\circ$ . The optical system (suns and sun-position sensor) facilitates the determination of the position of the station in space. A container-position sensor, used to record the angle at which the cross hairs of the optical scanning devices intersect the horizon, is also used for this purpose. Seven types of optical devices are used on the station: telephotometers, employing photoelectric receivers, which record the angular distribution of the energetic brightness in surrounding space; theradiometers, employing thermal radiation receivers, which make the same measurements; telespectrometers, which record the intensity distribution in the  $0.3-20\text{-}\mu$  range; spectroanalyzers, which record the total radiation flux and measure flux differences in two close regions of the spectrum—the  $0.2-0.35\text{-}\mu$  and the  $0.3-1.2\text{-}\mu$  ranges; balance meters, which record the integral radiation fluxes arriving at an object from below and above (measurement of the atmospheric radiation balance) in the  $0.3-40\text{-}\mu$  range; actinometers, which measure the integral flux of direct solar radiation in the range from  $0.2$  to  $40\text{-}\mu$ ; and control devices, which determine the position of the station relative to the sun and the earth's horizon. The VGAS

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ACCESSION NR: ATJ006854

may be used to investigate upper-level radiation parameters and to obtain statistical data on the distribution of energetic brightness of long- and shortwave radiation over the planetary disk and data on the atmospheric radiation balance. It may also be used in determining the temperature of the underlying surface, the height of the top of the cloud cover, and the amounts of ozone, water vapor, and meteoric matter in the atmosphere. Fig. 1 of the Enclosure shows a general view of the station. Orig. art. has: 14 figures.

ASSOCIATION: none

SUBMITTED: 27Mar62

DATE ACQ: 29Jul63

ENCL: 01

SUB CODE: AS

NO REF SOV: 000

OTHER: 000

Card 3/4

ACC NR: AP6033624

SOURCE CODE: UR/0102/66/000/005/0051/0056

AUTHOR: Kasatkin, A. M. (Kiev); Kasatkina, L. M. (Kiev)

ORG: none

TITLE: Simulation of purposeful behavior of living organisms

SOURCE: Avtomatyka, no. 5, 1966, 51-56.

TOPIC TAGS: automaton; data processing equipment, finite automaton, *information processing, cybernetics*

ABSTRACT: The authors describe an informal automaton which imitates some aspects of information processing by the human brain. The described automaton simulates the motor behavior of a man in a medium containing positive and negative irritants of different intensities. The automaton accept and realizes the decisions determined by it. These decisions are formed during processing in the logical, emotional, and motor spheres of the automaton, and are based on information received through the automaton inputs about state of the outer medium. The automaton's actions in conditional medium are directed towards definite object, which may either be given by an experimenter or formulated by the automaton itself. For this purpose the automaton makes a schedule of motion in the medium which is controlled by certain slave mechanisms. Since the schedule is constructed in stages, unsatisfactory results obtained at any stage of realization can be remedied by revising the schedule. Self-training is possible for some types of information processing. Orig. art. has: 4 figures.

SUB CODE: 09/06/SUBM DATE: 04Apr66/ ORIG REF: 005/

Card 1/1



YARKHIN, Ya.I., inzh.; RIZAYEV, R.G., inzh.; KASATKIN, A.O., inzh.; GAPOYAN,  
P.M., inzh.

Testing high-strength steel-reinforced concrete plates. Prom.  
stroil. 42 no.1:22-25 '65. (MIRA 18:3)



KASATKIN, A.P.; PETROV, T.G.; TREYVUS, Ye.B.

Crystallization of potassium iodate ( $\text{KIO}_3$ ). Kristallografiia 7 no.6:  
952-954 N-D '62. (MIRA 16:4)

1. Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.  
(Potassium iodate crystals)

KASATKIN, A.P.

Shock waves from centers of growth on the faces of  
tetrahedral and cubic  $\text{NaBrO}_3$  crystals. Kristallografiia  
9 no.2:302-305 Mr-Ap'64. (MIRA 17:5)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.

KASATKIN, A.P.:

Etch patterns and growth centers on the faces of  $\text{NaBrO}_3$  crystals.  
Vest. LGU 19 no.18:114-116 '64.

(MIRA 17:11)

ACCESSION NR: AP4012968

S/0020/64/154/004/0827/0828

AUTHOR: Kasatkin, A.P.

TITLE: The effect of supersaturation on the centers of growth

SOURCE: AN SSSR. Doklady\*, v. 154, no. 4, 1964, 827-828, and following insert

TOPIC TAGS: supersaturation, growth center, crystal growth, wave formation, shock wave, crystal face, crystal nucleus, critical nucleus, supercooling

ABSTRACT: An investigation into the evolution of the centers of growth in crystals, as determined by supersaturation, revealed that a change in the supersaturation diminishes the activity of the center of growth which yields its leading part to another center; as the supersaturation returns to its initial state, the mentioned centers resume the formation of shock waves. Attention is called to the fact that the changing supersaturation conditions are accompanied by the appearance of 10-15 centers of growth on a

Cord 1/2

ACCESSION NR: AP4012968

crystal facet surface, and that these are soon suppressed by the active center of growth emerging during the steady conditions. As F.K. Frank justly pointed out (New investigations in crystallography and crystallochemistry, 1, Moscow, 1950, p.56), there is a group of dislocation shifts in the crystal for every supersaturation value, and a change in the supersaturation should change the dominating group (the center of the growth pyramid). Our experimental data appear to agree with the dislocation theory of crystal growth. "The author is profoundly grateful to Prof. V.B. Tatarskiy and T.G. Petrov for their valuable advice in this work." Orig. art. has: 1 figure.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova  
(Leningrad State University)

SUBMITTED: 23May63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 003

OTHER: 000

Card 2/2

APR 18 1975

APR 18 1975

Rasatkin, A.P.

44,56

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D

The kinematics of the growth of sodium bromate crystals

Kristallografiya, v. 10, no. 4, 1965, p. 1144-1148

Chemical compound, crystal, growth, sodium bromate, crystal  
imperfection

**ABSTRACT:** Changes in the growth rate of crystals were studied under constant external conditions. The kinematics of growth of various  $\text{NaBrO}_3$  crystals was investigated under a microscope at temperatures of 15-40°C at relative humidities of 90-99%. The dimensions of the crystals were measured by a microscope. Seeding crystals were used in the course of 120 experiments. The growth temperature was determined from the growth/dissolution curves of crystals within 0.1°; the temperature dependence of the growth rate was determined.

EXPERIMENT NR: AP5018725

... not exceed  $0.05^\circ$ . The duration of the experiments varied between 15 min and 4 hours. At  $40^\circ\text{C}$  the change in the supersaturation of the solution with initial supersaturation of 0.054 amounted after 4 hours to 0.002 ( $0.2^\circ$ ). In experiments with higher supersaturation the temperature changed by  $0.1-0.2^\circ$  during each hour. The experiments were photographed with a cine camera.

... increases in the initial ... and the appearance of a ... were along the ... rate at all points of the plane. Thus concentration fluctuations like a triggering mechanism for the subsequent separation ... the concentration ... as a parameter for ... and steps by impurities of the ...



MISSION NR: AP5018725

expresses his deep gratitude to V. B. Tatarskiy and T. G. Petrov for  
concerning this work. Original tables and  
figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad  
State University) 44.55

SUBMITTED: 15Oct63

ENCL: 00

SUB CODE: SS

NR REF SOV: 011

OTHER: 003

Card 3/3

L 26748-66 EWT(1)/EWT(m)/T/EWP(t) IJP(c) JD/WW/JG/GG

ACC NR: AP6011477

SOURCE CODE: UR/0070/66/011/002/0328/0330

AUTHOR: Kasatkin, A. P.

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: On the influence of light on the growth of  $\text{NaBrO}_3$  crystals

SOURCE: Kristallografiya, v. 11, no. 2, 1966, 328-330

TOPIC TAGS: sodium compound, crystal growing, optic property, light radiation effect

ABSTRACT: The author shows that although for many years attempts to relate the influence of light with the rate of crystallization led to negative results, recent advances in solid-state physics and solid-state chemistry give grounds for assuming that such an influence does exist. To this end, he used apparatus developed by T. G. Petrov (Kristallografiya v. 2, no. 6, 1957) for the study of crystal growth under a microscope to investigate the influence of white light on the rate of growth of the (100) faces of  $\text{NaBrO}_3$  crystals. A prism measuring 1 to 2 mm grew at a temperature  $+10^\circ$  and at supercooling of  $4.2$  and  $6.8^\circ$ . The experiment lasted 2 and 4.5 hours. The crystal was made to grow alternately one half hour in darkness and one half hour between two 100-watt bulbs. The contours of the crystals were photographed with a motion picture camera every 72 seconds (using a flash lamp during the darkness tests). The results showed that at constant temperature and under supersaturation the (100) face had larger deviation in the growth rate under the influence of light, compared with the average value for this period, then in the case of growth in the

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UDC: 548.52

L 26748-66

ACC NR: AF6011477

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absence of light. In other words, the growth is weaker in darkness. At 10°C the increase in the growth rate was approximately by a factor 1.5. It is shown that the effect cannot be due to heating of the crystal by the light. There are still not enough data to explain this phenomenon fully. The author thanks T. G. Petrov for suggesting the topic and Professor V. B. Tatarskiy for valuable advice.

SUB CODE: 20/ SUBM DATE: 11May64/ ORIG REF: 005/ OTH REF: 004

Sodium 11

Card 2/2 11

KASATKIN, Aleksandr Sergeevich, 1899-

Electric measurements; a general course. Moskva, ios. energ. izd-vo, 1946.  
447 p. (51-32602)

TK275.K35

KASATKIN, Aleksandr Serge<sup>y</sup>vich, 1899-

Electrical engineering. Izd. 4., sovershenno perer. Moskva, Gos. energ. izd-vo, 1952.  
360 p. (53-19168)

TK145.K34 1952

KASATKIN, A. S.

A. S. Kasatkin, M. A. Perokalin, and P. S. Sergeyev, Elektrotel'mika (Electrical Engineering), Fifth Edition, revised. Gosenergizdat. 1953

The book is a course in electrical engineering for technical institute students in nonelectrical engineering fields. It contains the fundamentals of theory of direct and alternating current circuits, of electrical and magnetic poles, electrical measuring instruments, electrical machines and transformers, electron- and ion-converters, electric lighting, electrical apparatus, power networks and substations, and electrical stations and systems.

SO: Sovetskije knigi (Soviet Books), No. 183, 1953, Moscow, (U-6472)

KASATKIN, Aleksandr Sergeyevich; PEREKALIN, Mikhail Aleksandrovich;  
ZHUKHOVITSKIY, B.Ya., redaktor; SOKHRANSKIY, S.T., redaktor;  
VORONIN, K.P., tekhnicheskiy redaktor

[Electric engineering] Elektrotehnika. Izd. 6-e, zanovo perer.  
Moskva, Gos.energ. izd-vo, 1955. 376 p. (MLRA 9:2)  
(Electric engineering)



$$T(A \cup B) = K(A), B = \dots$$

AID P - 4121

Subject : USSR/Electricity

Card 1/2      Pub. 27   -   8/33

Author : Kasatkin, A. S., Prof., Moscow

Title : Effect of ferroresonance in complex interconnections.

Periodical : Elektrichestvo, 12, 36-39, D 1955

**Abstract** : The author investigates a circuit of current ferroresonance connected in series with a constant resistance or reactance. He uses the method of the equivalent generator (Norton's theorem), in order to determine the problem of stability of the separate branches of characteristics of complex interconnections, in which the current ferroresonance circuit enters as an integral element. The author analyses the whole circuit (except the coil with a steel core) as an active two-terminal network closing on this coil. He solves the problem of stability on the same basis as for a series circuit ferroresonance of voltages. In order to demonstrate

AID P - 4121

Elektrichestvo, 12, 36-39, D 1955

Card 2/2      Pub. 27 - 8/33

that the influence of nonsinusoidal curves is insignificant, the author presents results of an experimental analysis of equivalent connections. Among the characteristics presented are some which the author claims to be unknown in technical literature, in particular, a characteristic of a network in which at the same acting values of voltage and current, two sharply distinct current conditions in the branches are possible. Eight diagrams, 8 references (1923-1950)(7 Soviet).

Institution : Moscow Steel Institute im. Stalin

Submitted : D 4, 1954

VOSTROKNUTOV, Nikolay Georgiyevich; KASATKIN, A.S., redaktor; SKVORTSOV,  
I.M., tekhnicheskiy redaktor

[Electric and magnetic measurement techniques] Tekhnika izmerenii  
elektricheskikh i magnitnykh velichin. Izd. 2-oe, perer. Moskva,  
Gos. energ. izd-vo, 1956. 440 p. (MLRA 9:11)

(Electric measurements)

(Magnetic measurements)

POPOV, Viktor Stepanovich, kandidat tekhnicheskikh nauk; KASATKIN, A.S.,  
redaktor; SKVORTSOV, I.M., tekhnicheskiiy redaktor

[Electrical engineering measurements and instruments] Elektrotekhnicheskie izmereniia i pribory. Izd. 5-oe, ispr. Moskva, Gos. energ. izd-vo, 1956. 431 p. (MLRA 10:3)  
(Electric engineering--Measurement)

POPOV, Viktor Stepanovich; kand.tekhn.nauk; ~~KASATKIN, A.S.,~~ otv.red.;  
KAZAROV, Yu.S., red.; KANTOROVICH, A.I., tekhn.red.

[Electric meters and measurements] Elektrotekhnicheskie  
izmereniia i pribory. Izd. 6., ispr. Moskva, Gosenergoizdat-  
Sudpromgiz, 1958. 379 p. (MIRA 12:1)  
(Electric measurements) (Electric meters)

ALUKER, Shel Monosovich, kand.tekhn.nauk; KASATKIN, A.S., prof., nauchnyy red.;  
BEREZOVSKAYA, A.L., red.; PERSON, M.N., tekhn.red.

[Modern electric measuring instruments] Sovremennye elektroizmeritel'-  
nye pribory. Moskva, Vses.uchebno-pedagog.izd-vo Trudrezervizdat, 1958.  
192 p. (MIRA 12:3)

(Electric instruments)

VOSTROKNUTOV, Nikolay Georgiyevich; KASATKIN, A.S., otv.red.; NIKITINA,  
R.D., red.; LEVOCHKINA, L.I., tekhn.red.

[Electric and magnetic measurement techniques] Tekhnika izmerenii  
elektricheskikh i magnitnykh velichin. Izd.3., ispr. Moskva,  
Gosenergoizdat, 1958. 364 p. (MIRA 12:3)  
(Electric measurements) | (Magnetic measurements)



KASATKIN, A.S.

PHASE I BOOK EXPLOITATION 805

Kasatkin, Aleksandr Sergeyevich and Perekalin, Mikhail Aleksandrovich

Elektrotekhnika (Electrical Engineering) 7th ed., rev. Moscow,  
Gosenergoizdat, 1958. 464 p. 50,000 copies printed.

Ed.: Denkov, Ye.D.; Tech. Ed.: Fridkin, A.M.

**PURPOSE:** This book has been approved by the Ministry of Higher Education of the USSR as a textbook in electrical engineering for students of vtuzes.

**COVERAGE:** The book contains basic information on d-c circuit design, magnetic circuits, inductance, capacitance and the insulation of electrical installations. It treats the theory of alternating current and discusses electrical measuring instruments, transformers, d-c and a-c electric machines, electronic and ionic devices and equipment, semiconductor devices and equipment, electric devices, electrical apparatus, lighting, electric power

Card 1/20

Electrical Engineering

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stations, substations and networks. For this seventh edition of the book, the course material has been substantially revised and brought up to date. In conformity with the desire of Gosenergoizdat, descriptions of pertinent laboratory work have been given at the end of certain chapters. These descriptions are far from including all the laboratory course material. For example, there are no descriptions of laboratory work in magnetic circuits, transient processes, electrical measuring instruments, synchronous machines, electronics, etc. In their present form, the descriptions of laboratory work are only intended as a guide to laboratory practice for 50 class hours in a modestly equipped laboratory. With the exceptions of sections 1-3, 2-8, 3-4, 7-12, 7-25, 7-26, 7-27, 7-28, 8-9, 9-5 and 10-12, Chapters one to eleven were written by M.A. Perekalin. The introduction and the rest of the book were written by A.S. Kasatkin. No personalities are mentioned. There are no references.

Card 2/20

LIVSHITS, David Solomonovich; DEMKOV, Ye.D., red.; KASATKIN, A.S., red.;  
VORONIN, K.P., tekhn.red.

[Heating of wires and fuse protection in electric networks up to  
1000 volts] Nagrev проводников i zashchita predokhraniteliami  
v elektrosetiakh do 1000 v. Moskva, Gos.energ.izd-vo, 1959.  
37 p. (Biblioteka elektromontera, no.6).

(MIRA 14:1)

(Electric networks)

(Electric protection)

KASATKIN A.S.

ANVEL'T, Moyya Yur'yevich; GERASIMOV, Viktor Grigor'yevich; ZAYDEL',  
Khristina Eduardovna; KOGEN-DALIN, Vladimir Viktorovich; LYSOV,  
Nikolay Yegorovich; MOROZOV, Dmitriy Nikolayevich; NITUSOV,  
Yevgeniy Vasil'yevich; PANTYUSHIN, Vasiliy Sergeyevich, prof.;  
PUKHLYAKOV, Yuriy Kharlampiyevich; SMIRNOV, Vladimir Aleksandro-  
vich; UTKIN, Ivan Vasil'yevich; SHAROKHIN, Grigoriy Ivanovich;  
KASATKIN, A.S., retsenzent, red.; BORUNOV, N.I., tekhn.red.

[Electrical engineering; general course] Elektrotehnika;  
obshchii kurs. Pod red. V.S.Pantiushina. Moskva, Gos.energ.  
izd-vo, 1959. 632 p. (MIRA 13:1)  
(Electricity)

BYKOV, Mikhail Aleksandrovich; GRATSIANSKIY, Igor' Nikolayevich; KIFER,  
Isaak Iosifovich; KUTYASHOVA, Yelena Mikhaylovna; LEVIN, Mark  
Iosifovich; PRYTKOV, Vladimir Tikhonovich; STREKALOV, Ivan  
Aleksseyevich; TALITSKIY, Aleksandr Vasil'yevich; KHARCHENKO,  
Roman Romanovich; SHUMILOVSKIY, Nikolay Nikolayevich; KASATKIN,  
A.S. red.; VORONIN, K.P., tekhn.red.

[Course on electric measurements] Kurs elektricheskikh izmerenii.  
Pod red. V.T.Prytkova i A.V.Talitskogo. Moskva, Gos.energ.izd-vo.  
Pt.1. 1960. 479 p. Pt.2. 1960. 430 p. (MIRA 13:10)  
(Electric measurements)

KASATKIN, Aleksandr Sergeyevich; PEREKALIN, Mikhail Aleksandrovich  
[deceased]; BULGAKOV, V.A., red.; BORUNOV, N.I., tekhn. red.

[Electric engineering] Elektrotehnika. Izd.8., perer. Moskva,  
Gos. energ. izd-vo 1961. 459 p. (MIRA 14:9)  
(Electric engineering)

PETROV, Yevgeniy Andreyevich; OVCHARENKO, Nikolay Il'ich; KASATKIN, A.S.,  
prof., retsenzent; BORISOV, Ye.V., inzh., retsenzent; POPOV, G.A.,  
inzh., red.; KUZ'MINA, Ye.M., red. izd-va; DOBRITSYNA, R.I., tekhn.  
red.; SMIRNOVA, G.V., tekhn. red.

[Electronic devices for the protection of workers in the machinery  
industry] Elektronnye ustroistva dlia okhrany truda v mashinostroenii.  
Moskva, Mashgiz, 1961. 119 p. (MIRA 14:11)  
(Industrial safety) (Electronic instruments)



RITAYEV, Valentin Yevgen'yevich, kand. tekhn. nauk; SHLYAPINTOKH,  
Lev Samoylovich, inzh.-elektrik; KASATKIN, A.S., nauchn.  
red.; CHISLOV, M.M., red.; NESMYSLOVA, L.M., tekhn. red.

[Electrical engineering with principles of industrial  
electronics] Elektrotehnika s osnovami promyshlennoi elek-  
troniki. Moskva, Proftekhizdat, 1963. 411 p. (MIRA 16:10)  
(Electric engineering) (Electronics)

KASATKIN, Aleksandr Sergeyevich; PEREKALIN, Mikhail Aleksandrovich  
[deceased]; BULGAKOV, V.A., red.; BORUNOV, N.I., tekhn. red.

[Electric engineering] Elektrotehnika. Izd.8., perer. Mo-  
skva, Gosenergoizdat, 1963. 464 p. (MIRA 16:8)  
(Electric engineering)

POPOV, Viktor Stepanovich, kand. tekhn. nauk; Prinimal uchastiye  
AGAPOV, V.M., kand. tekhn. nauk; KASATKIN, A.S., prof.,  
retsensent; SHUROVA, Yu.P., red.; FRIDKIN, L.M., tekhn.  
red.

[Electrical measurements and instruments] Elektrotekhni-  
cheskie izmereniia i pribory. Izd.7., perer. Moskva,  
Gosenergoizdat, 1963. 543 p. (MIRA 17:2)

GRAMMATIKATI, Vera Mikhaylovna; SHLYAPINTOKH, Lev Samoylovich;  
PETROV, Vadim Konstantinovich [deceased]; KASATKIN, A.S.,  
nauchn. red.; SIL'VERSTROVICH, G.A., red.; DORODNOVA,  
L.A., tekhn. red.

[Teaching electrical engineering together with the  
fundamentals of industrial electronics] Prepodavanie elek-  
trotekhniki s osnovami promyshlennoi elektroniki. Moskva,  
Proftekhizdat, 1963. 174 p. (MIRA 17:3)

GLEBOVICH, Aleksandr Aleksandrovich, kand. tekhn. nauk, dots.;  
KASATKIN, A.S., prof., nauchn. red.; SEMAR, V.Yu., red.;  
DERYAGINA, S.I., red.

[Laboratory work in electrical engineering and the principles  
of industrial electronics] Laboratornye raboty po elektro-  
tekhnike s osnovami promyshlennoi elektroniki. Moskva, Vys-  
shaia shkola, 1964. 185 p. (MIRA 17:6)

1. Zaveduyushchiy kafedroy elektrotekhniki Vsesoyuznogo sel'-  
s'okhozyaystvennogo instituta zaochnogo obucheniya (for  
Glebovich).

AUTHOR: Kasatkin, A. S. (Engineer)

TITLE: Pulse-counting methods for measuring the frequency of transformed nonelectric signals

SOURCE: Priborostroyeniye, no. 8, 1964, 3-6

TOPIC TAGS: measurement, signal frequency measurement, measurand signal, signal

ABSTRACT: A cursory review is presented of the methods of signal-frequency measurement which are classified into the following 9 groups: (1) Non-synchronous, with contacting measuring intervals and with a fixed midpoint of each interval; (2) Same, but with a fixed starting point (or end point) of each interval; (3) Nonsynchronous, with noncontacting measuring intervals and with fixed midpoints; (4) Same, but with a fixed start (or end). (5) Synchronous, with

Cord 1/2

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ACCESSION NR: AP4044179

direct cycle count (6) Synchronous, with a measuring interval formed from a specified number of cycles; (7) and (8) Synchronous, with a measuring interval formed by all complete cycles (the two methods differ by the method of counting pulses of the quartz-controlled frequency); (9) Synchronous with counting both complete and incomplete cycles. Errors inherent to the above methods are discussed. It is found that: (1) Methods nos. 1, 4, 5, 7-9 ensure small averaging errors; (2) When high frequencies (10-100 kcl are involved, method no. 6 is recommended; (3) For nonsynchronous measurement of lower (10-5,000 cps) frequencies, method no. 7 is recommended. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: EC, IE

NO REF SOV: 000

OTHER: 000

KASATKIN, B. M.

Dissertation: "Rhombomys Optimus (Rodent found in a sandy soil region) in the Balkhash Lake Area and the Fight Against It." Cand Biol Sci, Inst of Zoology, Acad Sci Kazakh SSR, 14 Apr 54. (Kazakhstanskaya Pravda--Alma-Ata, 1 Apr 54)

SO: SUM 243, 19 Oct 1954



KASATKIN, B. S.

KASATKIN, B. S. --"Materials on the Problem: of Legal-Medical Wxamination of the Cadavers of Fetuses and the Newborn." First Moscow Order of Lenin Med. Inst., Moscow, 1955. (Dissertation for the Degree of Candidate in Medical Sciences)

SO: Knizhnaya Letopis', No. 35, 1955

KHRUSHCHELEVSKI, Edmund[Chroscielewski, Edmund], doktor med.;  
SHPERL'-ZEYFRIDOVA, Galina[Szporl-Seyfriedowa, Halina],  
doktor med.; KASATKIN, B.S., dots.[translator];  
CHERVAKOV, V.F., prof., red.; MATOVA, Ye.Ye., red.; BEL'CHIKOVA,  
Yu.S., tekhn. red.

[Autopsy on fetuses and newborn infants; pathological anatomical  
and forensic medical diagnosis and technics]Seksia trupov plo-  
dov i novorozhdenykh; patologoanatomicheskaja i sudebnomeditsin-  
skaja diagnostika i tekhnika. Pod red.V.F.Chervakova. Moskva,  
Medgiz, 1962. 223 p. Translated from the Polish. (MIRA 15:7)  
(FETUS, DEATH OF) (AUTOPSY) (INFANTS (NEWBORN))

KASATKIN, B. S.

Asnis, A. Ye. and Kasatkin, B. S. "Low-carbon steel for welded bridges",  
Trudy Vsesoyuz, konf-tsii po avtomat, svarke pod flyusom, 3-6 October 1947, Kiev,  
1948, pp. 97-108.

SO: U-3261, 10 April 53 (Letopis 'Zhurnal 'nykh Statey No. 11, 1949)

KASATKIN, B. S.

Kasatkin, B. S. "On steel for welded bridges", Trudy po avtomat. svarke pod flyusom (In-t elektrosvariki im. Patona), Collection 3, 1948, p. 29-59, - Bibliog: 9 items, Continued from Collection 2.

SO: U-3261, 10 April 53 (Letopis 'Zhurnal 'nykh Statey No.11, 1949)

KASATKIN, B. S.

25749

Opyt byplavki stali dlya svarnykh mostov. (Metalogr. analiz). Trudy po avtomat. svarke pod flyusom (in-t elektro-svarki im. Patona). SB. 6, 1949, s. 8-15.

B. Chernaya metallurgiya.

SO: Letopis' No. 34

KASATKIN, B. S.

USSR/Engineering - Bend Fatigue Tests Welds, Testing of

May 50

"Bending Testing of Welded Joints," A. M. Makarov, B. S. Kasatkin, Inst of Elec -  
Welding imeni Acad Ye. O. Paton, Acad Sci Ukrainian SSR, 7 $\frac{1}{2}$  pp

"Avtogen Delo" No 5

Describes experiments conducted by the Inst of Elec Welding in 1948-49. Concludes  
present standard OST7887 for bend testing of welded joints is unsatisfactory, and should  
be replaced by some more expedient method. Suggests bending test for specimens with  
longitudinally welded seam.

PA 160T22

**Applicability of Bend Testing of Welded Joints.** (In Russian.) A. M. Makara and B. S. Kasatkin. *Avtozgonnoe Delo* (Welding), v. 21, May 1950, p. 6-13.

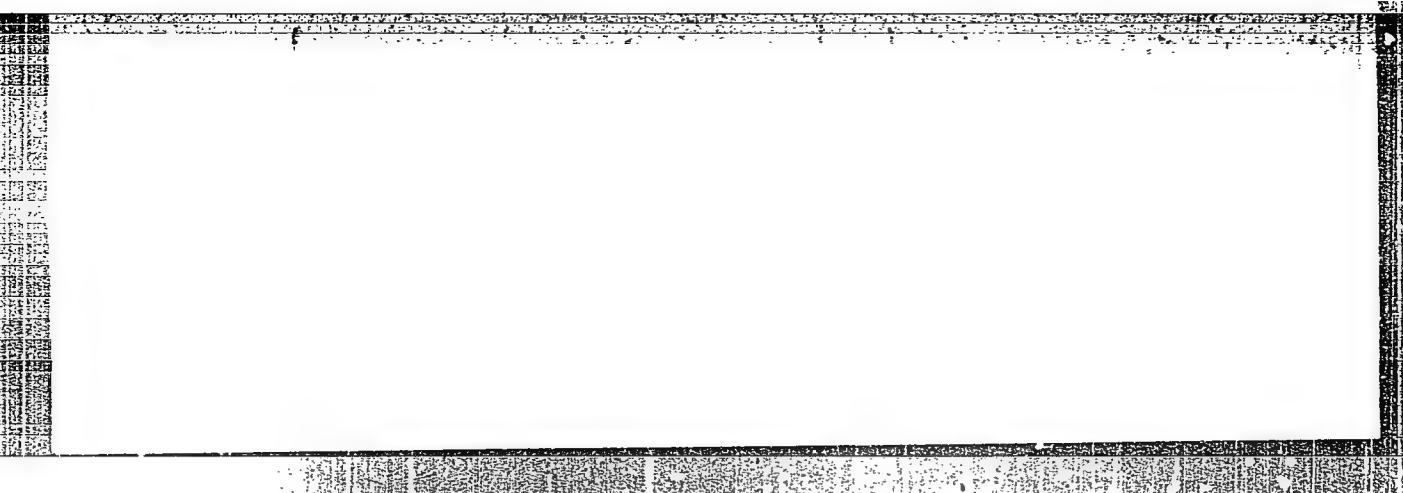
Critically investigates the applicability of standard bend tests for evaluation of the quality of welds. Two versions of the same low-carbon steel were tested, one dead metal and the other "bubbling." Influence of relation between strengths of base and of weld metals, of aging time, of heat treatment, and presence of microdefects on quality of the welds was investigated. Comparative data for 5 types of joints are tabulated. 11 ref.

KASATKIN, B S.



**"APPROVED FOR RELEASE: 06/13/2000**

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**APPROVED FOR RELEASE: 06/13/2000**

**CIA-RDP86-00513R000721010003-7"**

KASATKIN, B. S.

2. The first problem of the

is considered. Some conclusions which can explain properties  
of welded joints of low alloy steels

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721010003-7"

KASATKIN, B. S., MOVCHAN, B. A.

Steel Alloys

Some data on the influence of a metastable structure on the mechanical properties of metal.  
Avtom svar., 4, No 6(21), 1951.

Monthly List of Russian Accession, Library of Congress, June 1952. Unclassified.

KASATKIN, B.S.

Formation of defects in unshielded butt welding. Avtom.svar.6 no.3:  
55-62 My-Je '53. (MLRA 7:5)

1. Institut elektrosvarki im. Ye.O.Patona Akademii nauk USSR.  
(Electric welding)

1. KASHCHIN, B. S.

✓ Bessemer steel and peculiarities of its welding. B. S. Kasatkin and N. I. Kakhovskii, *Atomat. Svarka* 7, No. 5 (Whole No. 38), 24-37 (1964).—The quality of Bessemer steel BS13 can be improved significantly by the use of a complex deoxidation with addns. of molten pig iron, ferro-titanium, and aluminum. Results of an extensive study of the phys. and welding properties of this steel indicate that there is a crit. value for the ratio  $Al_{total}/N$ . With a N content of 0.013-0.018% optimum properties are obtained with 0.12-0.14% Al in solid solution, i.e. at a ratio of  $Al_{total}/N = 10$ . This condition is achieved by adding 2.5-3.0 kg. Al per metric ton of molten steel. Poor impact properties of welds are assocd. with the pptn. of Al nitrides at the grain boundaries. Welds with improved impact strength were obtained by using welding rods contg. 0.8% Al.

J. R. Behrman

62

①

Inst. Electric welding in Ye. O. Paton, AS USSR

with a corresponding to the bottom of the notch. Maximum stresses  
are located next to base and totally disappear at the apex of the

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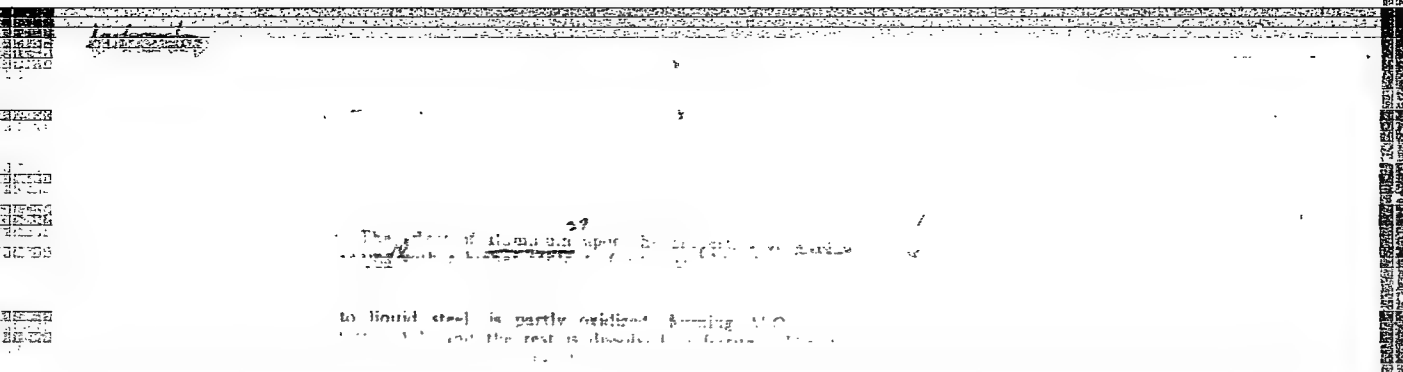
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triangle 1.5 to 2 mm below the bottom. Microcracks start near the  
base and propagate as fissures along the sides of the

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KASATKIN, B. S.

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KASATKIN, B.S.; KAKHOVSKIY, N.I.; MALEVSKIY, Yu.B.

Investigating the structure of ferrite in Bessemer steel  
welds by means of an electron microscope. Avtom. svar. 8  
no.6:96-98 N-D '55. (MLRA 9:2)

1.Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki  
imeni Ye.O.Patona AN USSR.  
(Ferrite--Metallography) (Electron microscope)

**"APPROVED FOR RELEASE: 06/13/2000**

**CIA-RDP86-00513R000721010003-7**



**APPROVED FOR RELEASE: 06/13/2000**

**CIA-RDP86-00513R000721010003-7"**

Kasatkin, B.S.

USSR/ Engineering - Stress analysis

Card 1/1 Pub. 22 - 21/52

Authors : Kasatkin, B. S.

Title : On the mechanism of destruction of notched specimens during impact bending tests

Periodical : Dok. AN SSSR 101/4, 665-666, Apr 1, 1955

Abstract : A description is presented of an experiment to determine the destruction mechanism in notched specimen during their impact test. Standard specimens were made of carbon steel. Three USSR references (1950-1954). Illustrations.

Institution : Acad. of Sc., Ukr. SSR, E. O. Paton's Inst. of Electrowelding

Presented by: Academician P. A. Rebinder, November 29, 1954

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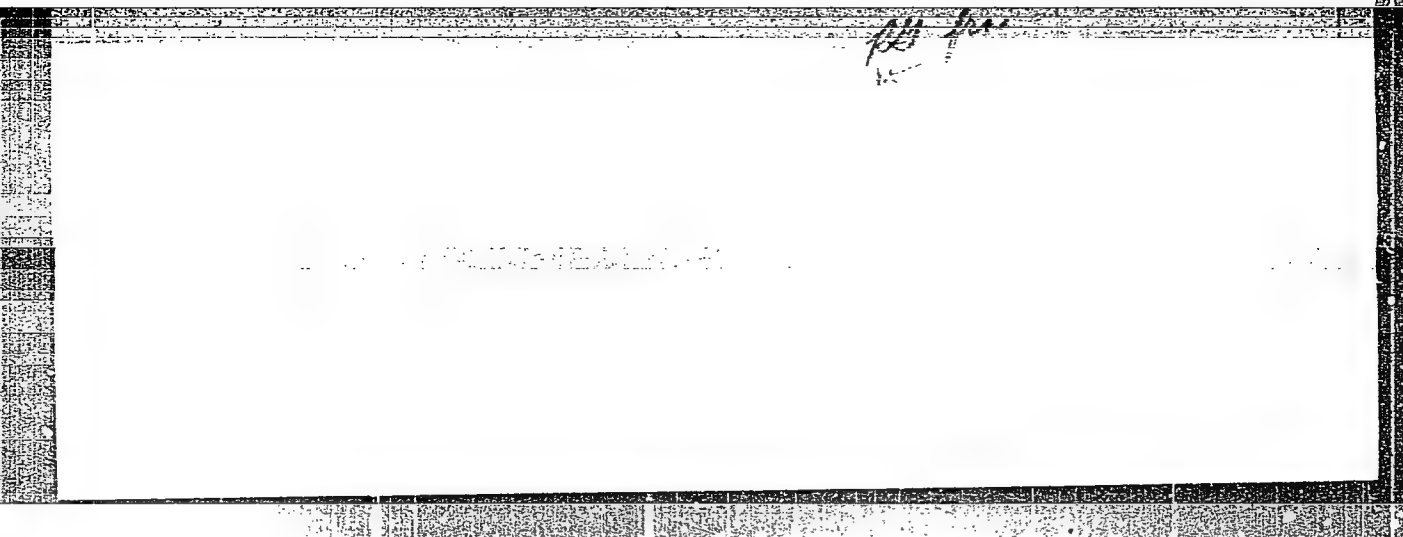
1/20/77 P.S.

APPROVED FOR RELEASE: 06/13/2000

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721010003-7"

KASATKIN, B.S.

AID P - 5413

Subject : USSR/Engineering

Card 1/1 Pub. 11 - 3/13

Authors : Kasatkin, B. S., N. I. Kakhovskiy, and Yu. N. Vakhnin

Title : Carbon dioxide welding of alloyed steels

Periodical : Avtom. svar., 5, 19-21, My 1956

Abstract : The authors describe the results of experiments in the development of suitable electrodes for carbon dioxide welding of alloyed steels and present data on the powdered electrode wires as most adaptable to the purpose. Three graphs and 1 table; 2 Russian references (1955) and 1 German reference (1956).

Institution : Electrowelding Institute im. Paton.

Submitted : No date

KASATKIN, B.S.

Effect of alloying elements on the development of chemical  
heterogeneity in welded joints. Avtom. svar. 9 no.6:104-108 N-  
D '56. (MIRA 10:3)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.  
Ye.O. Patona AN USSR.  
(Steel alloys--Welding) (Metallography)

*Kasatkin, B.S.*

KASATKIN, B.S., kandidat tekhnicheskikh nauk.

Allowable arsenic content in MSt.3 open-hearth steel. Stal'  
16 no.7:624-629 J1 '56. (MLRA 9:9)

1. Institut elektrosvarki imeni akademika Ye.O. Patona.  
(Steel--Testing) (Arsenic)

**"APPROVED FOR RELEASE: 06/13/2000**

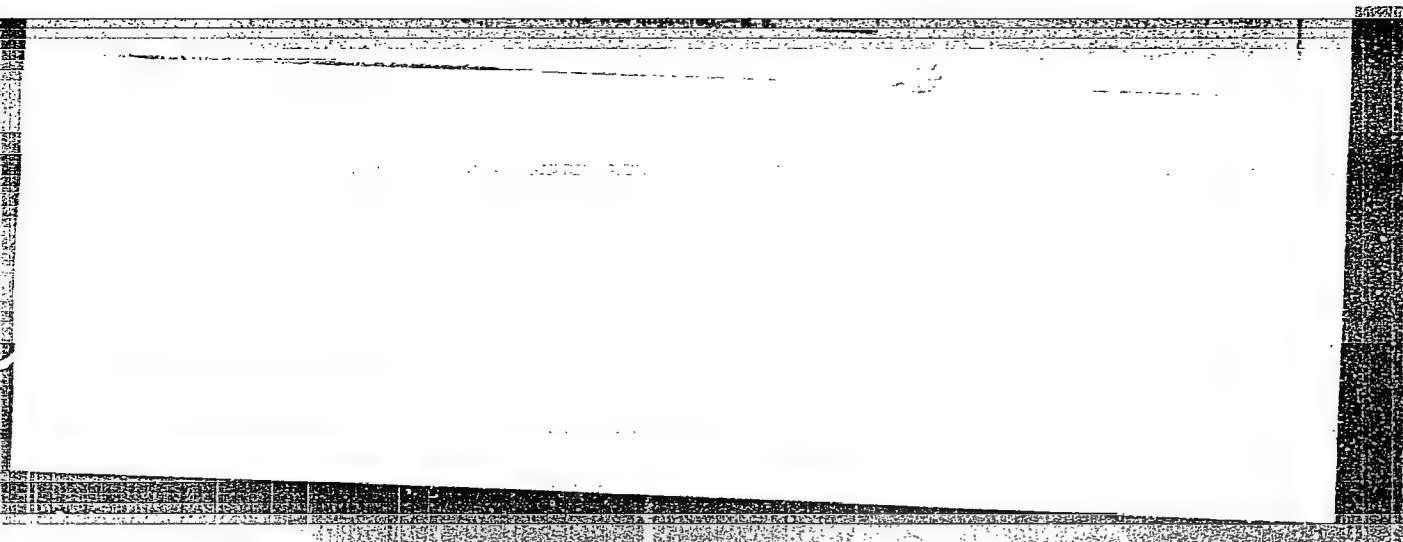
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**APPROVED FOR RELEASE: 06/13/2000**

**CIA-RDP86-00513R000721010003-7"**

KASATKIN, B.S., kand. tekhn. nauk; KAKHOVSKIY, N.I., kand. tekhn. nauk;  
VAKHIN, Yu.N., inzh.

Gas-electric welding of steam turbine diaphragms. Teploenergetika  
4 no.12:42-47 D '57. (MLRA 10:11)

1. Institut elektrosvarki USSR.  
(Steam turbines--Welding)



KASATKIN, B.S.

135-5-1/14

SUBJECT: USSR/Welding

AUTHORS: Rossoshinskiy, A.A., Candidate of Technical Sciences, and  
Kasatkin, B.S., Candidate of Technical Sciences:

TITLE: Effect of Some Alloying Elements on the Chemical Heterogenities  
and the Mechanical Properties of Welds. (Vliyaniye nekotorykh  
legiruyushchikh elementov na khimicheskuyu neodnorodnost'i  
mekhanicheskiye svoystva svarnykh shvov).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, # 5, pp 1-6 (USSR).

ABSTRACT: The purpose of the investigation was to determine how nickel,  
chromium, manganese and silicon, in quantities as contained in  
low-alloy and medium-alloy standard steels, influence the for-  
mation of chemical heterogenities of welding seams and to study  
the influence of these heterogenities on the mechanical pro-  
perties of the welding seams. Butt welds, were investigated  
which were made by automatic welding of 20 mm thick "MCT.3"  
steel with welding rod "CB08A" of 5 mm diameter and flux "AH-  
348A".

Card 1/4 The investigation revealed that welding seams are chemically  
heterogeneous. In the center area of the welding seams, there

135-5-1/14

## TITLE:

Effect of Some Alloying Elements on the Chemical Heterogeneities and the Mechanical Properties of Welds. (Vliyaniye nekotorykh legiruyushchikh elementov na khimicheskuyu neodnorodnost' i mekhanicheskiye svoystva svarnykh shvov).

was a dendritic heterogeneity, and in the outer zones a laminated heterogeneity was observed on layers of crystallization, which form as a result of the exchange processes between the not completely solidified metal and the liquid metal of the welding puddle. The same processes affect the formation of the dendritic heterogeneity. It was found that a higher cooling rate gave decreased dendritic heterogeneity and simultaneously increased laminated heterogeneity. The chemical heterogeneity of low-carbon welds was insignificant.

Nickel, chromium, manganese, and silicon had a pronounced influence on formation of the chemical heterogeneity of welds. Nickel in quantities over 1.5 % liquates little, but markedly increases liquation of carbon, sulfur, and phosphorus. Increasing the nickel content to more than 2 %, leads to hot fissures and to an abrupt deterioration of mechanical properties of the weld metal. Manganese content of 1.5-2.5 % liquates slightly more than nickel, but it abruptly and more strongly than other

Card 2/4

135-5-1/14

TITLE: Effect of Some Alloying Elements on the Chemical Heterogenities and the Mechanical Properties of Welds. (Vliyaniye nekotorykh legiruyushchikh elementov na khimicheskuyu neodnorodnost' i mekhanicheskiye svoystva svarnykh shvov).

ASSOCIATION: Institut elektrosvarki imeni E.O. Patona AN USSR, (Welding Institute imeni E. O. Paton Academy of Sciences, Ukrainian SSR).

PRESENTED BY:

SUBMITTED:

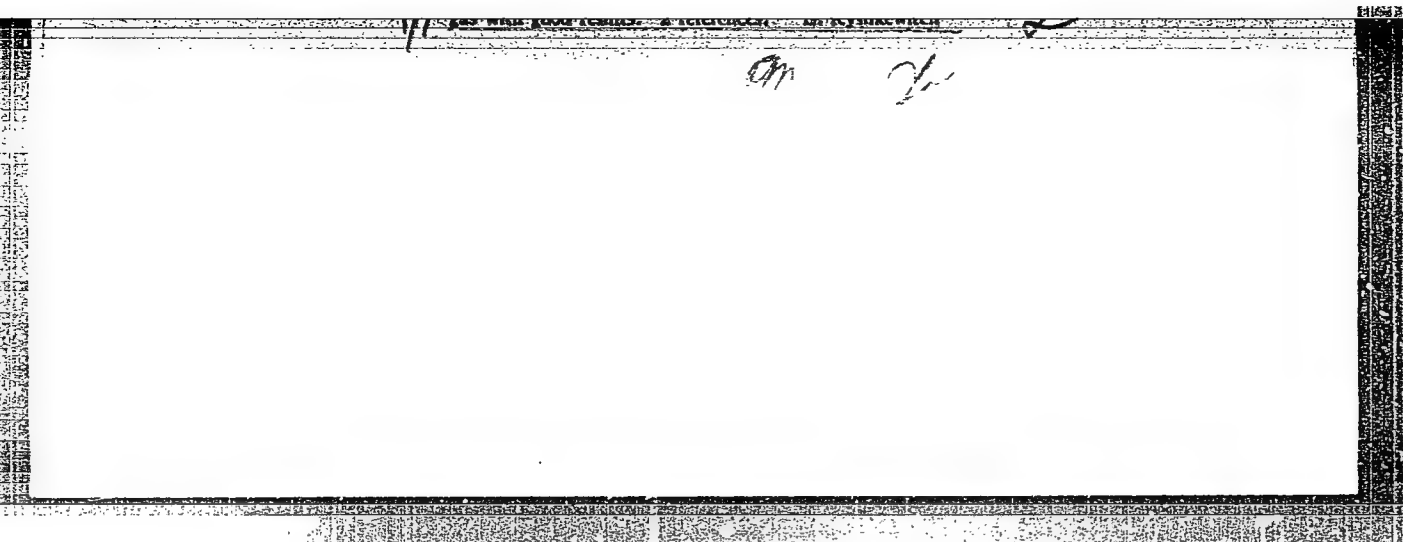
AVAILABLE: At the Library of Congress.

Card 4/4

Automatic welding of low alloy steels with  
strength in carbon dioxide gas medium

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CIA-RDP86-00513R000721010003-7



APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721010003-7"

135-58-1-2/23

AUTHOR: Kasatkin, B.S., and Rossoshinskiy, A.A., Candidates of  
~~Technical Sciences~~

TITLE: Structural Heterogeneity of Welded Seams (O strukturnoy  
neodnorodnosti svarnykh shvov)

PERIODICAL: Svarochnoye Proizvodstvo, 1958, Nr 1, pp 6 - 8 (USSR)

ABSTRACT: The authors state that various crystallization conditions  
have a decisive effect on the quality of seams. This as-  
sumption was tested by investigations of the fine struc-  
ture of welded seams, carried out on low alloyed steel,  
type NL-2, 20 mm thick with SV-08 rods under AN-348 flux  
and according to the following regime: current intensity  
was 850 amp arc voltage-36 to 38 v., welding rate 20 m/hr.  
The chemical composition of the seams was as follows:  
0.12% carbon, 0.43% silicon, 0.80% manganese, 0.39% nickel,  
and 0.35% copper. For the tests 1 mm thick plates were cut  
from the welded seams. X-ray photographs of immovable and  
rotating samples were taken in large chambers with a drum  
149 and 156 mm in diameter. The rotating samples moved  
around an axis perpendicular to the direction of the pri-  
mary X-ray bundle. The inner stresses were determined by  
the interference lines of (110) and (220) Ref. 8. The na-  
ture of stress distribution of the second and third type

Card 1/2

135-58-1-2/23

• • Structural Heterogeneity of Welded Seams

is shown in Figure 4. The data shows that an irregular distribution of second and third type stress takes place in the seams after the welding process. The authors come to the following conclusions; The structural heterogeneity is characteristic for seams welded under flux, and it is connected with the peculiarities of crystallization. High stresses of the third type are characteristic for the central sections of the welded seams, caused mainly by the presence of dendritic heterogeneity. Second type stresses arise, particularly, in sections adjacent to fusion lines, and are obviously caused by the mechanical effect of the primary metal crystallization. There are 4 figures and 8 Soviet references.

ASSOCIATION: Institut elektrosvariki imeni akad. Ye. O. Patona AN UkrSSR  
(Institute of Electric Welding imeni Academician Ye.O. Paton  
of the UkrSSR Academy of Sciences)

AVAILABLE: Library of Congress

Card 2/2 1. Seam welding 2. Welds-Analysis

KASATKIN, B.S. (Cand. Technical Sci., Kiev)

"Die Automatische Schweissung Warmfester Stahl Unter CO<sub>2</sub> Gasschutz,"  
Schweisstechnik, No. 2, 1958.



KASATKIN, B.S.

135-58-4-14/19

AUTHOR: Okerblom, N.O., Professor, Doctor of Technical Sciences

TITLE: A Conference on Welding in the German Democratic Republic  
(Konferentsiya po svarke v Germanskoy Demokraticheskoy Respublike)

PERIODICAL: Svarochnoye Proizvodstvo, 1958, Nr 4, pp 40-42 (USSR)

ABSTRACT: A conference on welded structures was held at Halle from the 9th to 11th October 1957. It was organized by the Palata tekhniki (Chamber of Engineering) and the Tsentral'-nyy institut svarochnoy tekhniki Germanskoy Demokraticheskoy Respubliki (The Central Institute of Welding of the German Democratic Republic). About 1,000 participants were present, including delegates from Bulgaria, Hungary, West Germany, Poland, Rumania, USSR, Czechoslovakia, Switzerland, Yugoslavia and Japan. The Soviet delegation from the NTO mashinostroitel'noy promyshlennosti Sovetskogo Soyuza (Scientific-Technical Department of the Soviet Union Machine-Building Industry) included the author of this article, A.N. Shashkov, Candidate of Technical Sciences; and G.A. Maslov, Dotsent. Professor G.A. Nikolayev, Doctor of

Card 1/3

135-58-4-14/19

A Conference on Welding in the German Democratic Republic

Technical Sciences; B.S. Kasatkin, and V.V. Bazhenov, Candidates of Technical Sciences; were sent by other Soviet organizations. The introductory report was delivered by State Secretary Tsisenis (Ministerstvo tyazhologo mashinostroyeniya - Ministry of Heavy Machine-Building). The Conference heard the following reports: Professor G.A. Nikolayev, on "Problems of Automation in Welding Processes"; B.S. Kasatkin, on "Automatic Welding of Heat-Resistant Steels in Carbon Dioxide Gas Shields"; V.V. Bazhenov, on "Fields of Application and Technico-Economic Characteristics of Welding in Carbondioxide Gas Shields"; Doctor V. Gil'de (Director of the Tsentral'nyy institut svarochnoy tekhniki - TSIS - the Central Institute of Welding Engineering), on "Use of High-Strength in Welding Engineering"; V. Anders, (Technical Director of TSIS), on "Shrinkage in Girder Parts Welded Under Flux"; A. Neyman (Head of the Otdel isledovaniy TSIIIS - the TSIIIS Experimental Department), on "Strength and Endurance of Joints Welded Under Flux and Their Calculation"; R. Myuller, Diploma-Engineer from Magdeburg, on "Influence of the Constructive Shape of Machine Parts on

Card 2/3

135-58-4-14/19

A Conference on Welding in the German Democratic Republic

Costs in Automatic Welding"; Doctor-Engineer G. Bekker (TSIIS Branch at Finsterwal'de), on "New Investigations in the Metallurgy of Automatic Welding Under Flux"; F. Richter (Berlinskiy elektrodnyy zavod - the Berlin Electrode Plant), on "Highly Efficient Electrodes in the German Democratic Republic"; Engineer Lakatos from Bratislava, on "Investigation of Gray Iron Cold Welding"; Professor A. Matting from Hannover, on "Light Alloy Metal Structures"; Beme (TSIIS), on "Spot-Welded Joints Under Dynamic Load and Their Computation". The third day of the conference was devoted to visits to the TSIS Laboratory and to the Leuna Plant at Merseburg. The Soviet delegates also visited the Hohenturm Boiler Plant, the Bergmann-Borsig Plant in Berlin and the Berlin Electrode Plant.

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Kasatkin, B. S. (Kiyev)

SOV/24-58-5-11/31

TITLE: The Micromechanism of Brittle Fracture of Steel  
(Mikromekhanizm khrupkogo razrusheniya stali)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh  
Nauk, 1958, Nr 5, pp 63-68 + 2 plates (USSR)

ABSTRACT: The investigation described by K. consisted in studying various stages of brittle fracture of low-carbon steels in impact bending. The notched bar impact test pieces, with either the standard U-shaped notch or a V-shaped notch (2.0 mm deep, 0.25 mm root radius), were prepared from (i) heat-treated (furnace-cooled after 90 mins at 1100°C) open-hearth steel, (ii) Bessemer steel, and (iii) forged technical iron. Application of clamps made it possible to limit the degree of deformation (measured by the linear and angular deflection of the free end of the test piece) to any pre-determined value. The preliminary impact bending tests carried out on a Charpy impact testing machine, below the critical temperature  $T_c$  (the temperature at which the type of fracture changes from brittle to ductile) showed that up to a certain value of linear deflection  $S$  (or

Card 1/5

SOV/24-53-5-11/31

# The Micromechanism of Brittle Fracture of Steel

angular deflection  $\delta$ ), which depended on the sharpness of the notch, the test pieces could be deformed without showing any visible signs of fracture. Brittle fracture occurred only when  $S$  exceeded 0.7 mm ( $\delta > 3-4^\circ$ ) in U-notched specimens, and 0.3-0.4 mm in V-notched test pieces. In the next stage of the investigation the temperature dependence of the impact strength  $a_k$  in the temperature region  $-30$  to  $+20^\circ\text{C}$  was determined for the following three groups of test pieces:

- (i) Test pieces not subjected to any preliminary treatment;
- (ii) Test pieces preliminarily deformed at a temperature  $15-20^\circ\text{C}$  below  $T_c$ ;
- (iii) Test pieces preliminarily deformed at a temperature above  $T_c$ .

The results of these experiments, reproduced graphically, show that while preliminary deformation above  $T_c$  did not affect the  $a_k$ /temperature relationship, the experimental values of  $a_k$  of the test pieces deformed below  $T_c$  prior to testing were more scattered than those for the

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SOV/24-58-5-11/31

The Micromechanism of Brittle Fracture of Steel

undeformed specimens and were shifted by 10-15°C in the direction of the positive values of  $T_c$ . Microscopic examination of the longitudinal sections of the test pieces deformed (but not fractured) in the brittle region, i.e. below  $T_c$ , revealed the presence of twins and micro-cracks located at a distance of 1-3 mm from the root of the notch. These observations were confirmed by the results of X-ray examination which showed that the regions of the maximum stress concentration and most intensive grain fragmentation were situated 1.5 to 2.5 mm from the root of the notch. At the same time, micro-hardness measurements carried out on specimens tested to destruction under conditions of brittle fracture revealed a considerable increase of hardness of the grains in the immediate vicinity of the fracture (indicating a high degree of grain fragmentation), although the degree of fragmentation as shown by both micro-hardness measurements and X-ray examination varied considerably from grain to grain. On the basis of the experimental results and theoretical considerations the following mechanism of brittle fracture is postulated: On application of the load the most favourably oriented grains undergo

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SOV/24-58-5-11/31

The Micromechanism of Brittle Fracture of Steel

fragmentation into a large number of small blocks, and the deformation at this stage is due to the movement of the blocks within the original grains which subsequently change their shape. In this way slip of the grains along the grain boundaries is initiated. At low temperatures and high rates of deformation the resistance to slip increases with the result that the magnitude of stresses necessary for the slip to take place also increases. Localised stress concentrations thus produced lead to the formation of twins and microcracks. The conditions in the thin layer at the root of the notch are somewhat different, and since it is situated at the surface it is deformed by slip. Brittle fracture of a notched bar test piece begins underneath the plastically deformed surface layer, in the region where the conditions are most favourable for the formation of the microcracks. After these have spread and reached the surface of the notch, the main crack is propagated into the interior of the test piece through a series of microcracks formed in the initial stages of the process.

Card ~~4/5~~

KASATKIN, B.S.

135-58-6-8/19

AUTHOR: Kasatkin, B.S.; Candidate of Technical Sciences

TITLE: The Brittle Failure of Steel (O mekhanizme khrupkogo razrusheniya stali)

PERIODICAL: Svarochnoye Proizvodstvo, 1958, Nr 6, pp 24-28 (USSR)

ABSTRACT:

There are several theories about the phenomenon of brittle failure which has many times caused disastrous results in welded structures in the course of the past 20 years, and which has not been completely explained. This article gives the results of an investigation made by the Institute of Electric Welding imeni Paton. The micro-mechanism of brittle failure was studied in separate stages of the failure process in bending with impact, on prismatic specimens with standard notch, and with a 2 mm deep V-notch inserted in a special shell (the test method with such shell was previously described in Ref. 7). It was concluded, that the process consists of two basic stages: pre-failure characterized by fracturing of metal grains and plastic deformation; formation of twin crystals and appearance of microscopic cracks within the grains; and the brittle fracture proper. The first stage is not visible on the notch surface.

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135-58-6-8/19

The Brittle Failure of Steel

The second stage starts with the formation of a tough crack in the thin surface layer of metal at the bottom of the notch. The fracture then propagates along the earlier formed inner cracks separated from one another by walls consisting of partly deformed grains. Hence the process of brittle fracture is not continuous and the first stage is not inevitably accompanied by the second stage. Under certain conditions, a pre-failure condition can develop and remain concealed. Loading applied later leads to complete brittle failure even in "mild" conditions. There are 7 micro-photographs, 2 graphs, and 8 references, 4 of which are Soviet and 4 English.

ASSOCIATION: Institut elektrosvariki imeni Ye.O. Patona AN USSR (Electric Welding Institute imeni Ye. O. Paton AS USSR)

AVAILABLE: Library of Congress

Card 2/2

KASATKIN, B.S.

Etch figures on twinned interlayers of structural iron. Inzh.-fiz.  
zhur. no.10:106-108 0 '58. (MIRA 11:11)

1. Institut elektrosvarki imeni Ye.O. Patona AN USSR, g. Kiyev.  
(Iron, Structural--Metallography)

SOV-125-58-2-3/11

AUTHOR: Kasatkin, B.S., Kareta, N.L. and Darovskiy, G.F.

TITLE: Fine Structure and Its Effect on the Toughness of Weld Joints  
(Tonkaya struktura i yeye vliyaniye na udarnuyu vyazkost:  
svarnnykh shvov)

PERIODICAL: Avtomaticheskaya svarka, 1958, <sup>11</sup>Nr 2, pp 20-29 (USSR)

ABSTRACT: Experimental investigations of fine structure in low-carbon and low-alloy weld joints were carried out with the use of an electronic microscope, permitting direct observation of the inner structure of the metal grains and revealing some peculiarities which could not be detected by X-ray examinations. The article contains a detailed description of the experiments and of the results obtained which lead to the following conclusions: 1) conditions of the welding process have a substantial effect on the inner structure of grains; 2) increased cooling rates entail higher stresses of II and III order, reduction of size and chemical heterogeneity of blocks of the intragranular structure; 3) slow cooled weld metal is characterized by the most perfect ferrite grain blocks approaching symmetrical shape; 4) the critical temperature of the seam brittleness is determined by the

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SOV-125-58-2-3/11

Fine Structure and Its Effect on the Toughness of Weld Joints

peculiarities of structure and the properties of submicro-zones (blocks) and microzones (grains); 5) inner stresses of II and III order are of a secondary effect, as they influence the plastic deformation process which precedes the formation of microcracks.

There are 2 graphs, 3 tables, 5 micro-photos and 12 references, 10 of which are Soviet, 1 English and 1 German.

ASSOCIATION:

Institut elektrosvariki imeni Ye.O. Patona, AN USSR (Institute of Electric Welding imeni Ye.O. Paton, AS UkrSSR)

SUBMITTED:

September 10, 1957

1. Welds--Structural analysis

Card 2/2

AUTHORS: Kasatkin, B.S., and VAKHNIN, Yu.N. SOV 125-58-3-1/15

TITLE: Welding Heat Resistant 20KhMF-Steel in Carbon Dioxide  
(Svarka v srede uglekislogo gaza teploustoychivoy steel 20 KhMF)

PERIODICAL: Avtomaticheskaya svarka, <sup>11</sup>Nr 3, 1958, pp 3-11 (USSR)

ABSTRACT: The described technology of welding 20KhMF steel in carbon dioxide was developed by the Institute of Electrowelding at the request of the Kharkovskiy Turbinnyy Zavod (Kharkov Turbine Plant) and the Bryanskiy Mashinostroitel'niy Zavod (Bryansk Machine Building Plant). Information is presented on experiments and results of tests. The following conclusions were made: Welding of heat resistant 20KhMF-steel in carbon dioxide can be successfully performed with special wires of the following composition; 1) powder wires containing up to 0.14% C, 1.7 to 2.0% Mn, 0.6 to 0.9% Si, 0.8 to 1.1% Cr, 0.5 to 0.6% Mo, 0.2 to 0.3% V, S and P not over 0.3% each; 2) metallic wires containing up to 0.10% C, 1.4 to 1.8% Mn, 0.6 to 0.8% Si, 0.8 to 1.1% Cr, 0.5 to 0.6% Mo, 0.2 to 0.3% V, S and P not over 0.03% each. The technology of the heat treatment is also described. The article contains 6 tables, 1 figure, 4 graphs and 5 Soviet references.

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SOV 125-58-3-1/15

Welding Heat Resistant 20KhMF-Steel in Carbon Dioxide

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki  
imeni Ye.O. Patona AN USSR (Institute of Electrowelding  
imeni Ye.O. Paton, AS UkrSSR, Bearer of the Labor Order of  
the Red Banner)

SUBMITTED: December 28, 1957

1. Heat resistant alloys--Arc welding 2. Heat resistant alloys  
--Heat treatment 3. Carbon dioxide--Performance 4. Welds--Test  
results 5. Arc welding--Electrodes

Card 2/2

AUTHOR: Kasatkin, B.S.

SOV/125-58-11-12/16

TITLE: Cold Brittleness of the Metal in Low Carbon Weld Joints  
(Khrupkoye razrusheniye metalla nizkouglerodistykh svarnykh shvov)

PERIODICAL: Avtomaticheskaya svarka, 1958, <sup>v. 11</sup> Nr 11, pp 71-80 (USSR)

ABSTRACT: The cold brittleness of weld joints in low carbon steel is investigated, and tests carried out on butt welded specimens with a V-shaped notch have proved that cold brittleness takes place in two stages: 1) pre-breaking, including plastic deformation and micro-crack formation under the notch; 2) development of a basic crack, beginning in the upper layer of the metal near the notch bottom. There are 9 microphotos, 1 diagram, 1 graph and 6 Soviet references.

ASSOCIATION: Institut elektrosvariki imeni Ye.O. Patona AN USSR (Institute of Electric Welding imeni Ye.O. Paton, AS UkrSSR)

SUBMITTED: August 7, 1958

Card 1/1

SOV/125-58-12-2/13

AUTHORS: Kasatkin, B.S., Kareta, N.L., Vakhnin, Yu.N., and German, S.I.

TITLE: The "White" Band in "15Kh1M1F" Grade Welded Joints ("Belaya" poloska v svarnykh soyedineniyakh iz stali 15Kh1M1F)

PERIODICAL: Avtomaticheskaya svarka, 1958, <sup>V.11</sup> Nr 12, pp 12-16 (USSR)

ABSTRACT: Tests were carried out for the purpose of determining the origin of the so-called "white" band in weld joints near seams which are subjected to various structural deformations, particularly noticeable in etching with nitric acid. It was stated that the white strip formation depends on residual plastic deformations in heat zones below the  $A_{c1}$  point. The white strip metal has a deformed crystalline lattice and an increased carbon and nitrogen content in the solid solution. The formation of the white band and ageing zone are of a similar nature, depending mainly on residual plastic deformation and not on the high cooling rate from temperatures below  $A_{c1}$ . There are 3 sets of microphotos, 2 tables and 6 Soviet references.

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